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SYRINGES AND NEEDLES

84 SYRINGES AND NEEDLES

Another misgiving I have about microscale is that you often have to handle samples by syringe. There are about 25 rules for handling syringes. The first five are:

1. These are dangerous—watch it.
2. Watch it—don't stick yourself.
3. Don't stick anyone else.
4. Be careful.
5. Don't fool around with these things.

The other 20 rules—well, you get the idea. If that's not enough, some states require *extremely* tight control of syringes and needles. They might be kept under double lock and key in a locked cabinet in a locked room, and require extensive sign-out *and* sign-in procedures. And if you do get stuck, bring yourself and the syringe to the instructor immediately.

You'll probably use a glass or plastic syringe with a **Luer tip** (Fig. 43). This is a standard shape tip that can fit various pieces of apparatus, including the syringe needle. All you do is push the tip into the receptacle. Don't confuse this with the **Luer lock**, a special collar placed around the

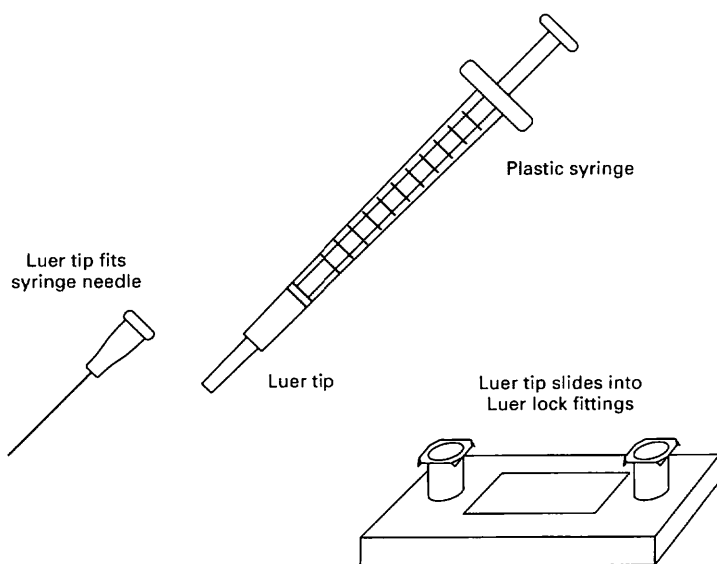


Fig. 43 Luer tip syringe and some of its fittings.

Luer tip designed to hold, well, *lock* the syringe barrel onto the apparatus, including needles (Fig. 44). You push the lock onto the receptacle and, with a twist, lock the syringe barrel to it. You'll have to *untwist* this beast to release the syringe barrel.

The biggest mistake—one that I still make—is losing my patience when filling a syringe with a needle attached. I always tend to pull the plunger quickly, and I wind up sucking air into the barrel. Load the syringe slowly. If you do get air in the barrel, push the liquid back out and try again.

Injecting a sample through a Teflon-lined plastic disk, or a rubber septum, is fairly straightforward. Don't get funny and try slinging the needle—medical school style—through the disk. Use two hands if you have to: one to hold the barrel and the other to keep the plunger from moving. Slowly push the plunger into the barrel to deliver the liquid.

THE RUBBER SEPTUM

If you're using syringes, you should know about the **rubber septum**. You put the smaller end into the opening you're going to inject into, and then roll the larger end over the *outside* of the opening (Fig. 45). You

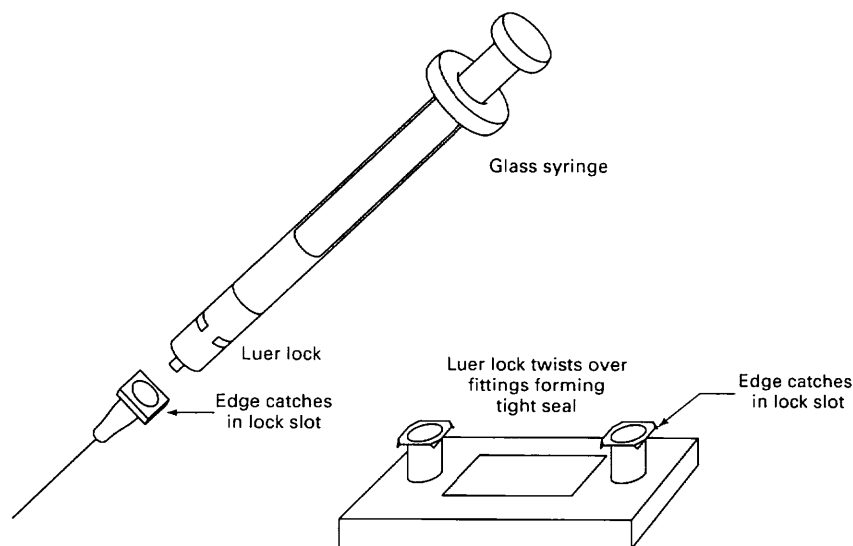


Fig. 44 Luer lock syringe and some of its fittings.

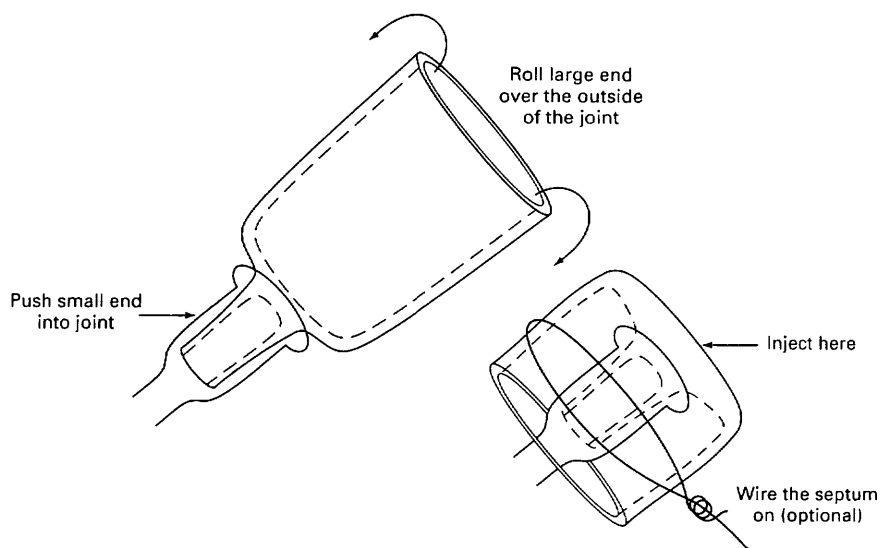


Fig. 45 The rubber septum.

might use a length of copper wire to keep the rubber septum from coming out of the opening, especially if there's any chance of a pressure buildup inside the apparatus.